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Maritime Trade Warfare Against A Modern Power

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

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Contents

Paper Abstract

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Introduction

Maritime trade warfare has been a staple of naval warfare since ancient Greece, and naval blockades are typical strategies sea powers have used to execute trade warfare. However, today's globalization and proliferation of technology present new challenges to navies attempting to conduct blockade. With 95% of the world's goods shipped by sea[1] and more than half the world's oil delivered by tanker,[2] denying an adversary's access to maritime commerce should be an effective means of coercion during war. However, conducting a blockade against a modern power tied into the global economy may be perilous. Advancing technological sophistication of shore based weapons and difficult asymmetric threats can force a sea power's blockading fleet far from the zone of conflict. A distant blockade requires more assigned forces to compensate for the expansion of Factor Space, which a naval power may not be able to afford. Additionally, a distant blockade has a higher chance of impacting neutral and allied trade routes. A naval power may not be able to sustain a blocking coalition if allies are suffering and neutrals turn hostile.

Analysis of a hypothetical blockade of People's Republic of China highlights modern concerns associated with conducting maritime trade warfare. Potential conflicts ranging from human rights abuses to war over Taiwanese sovereignty provide a range of scenarios in which a blockade could be considered. Though a blockade was not necessary to enforce sanctions resulting from the crackdown in Tiananmen Square,[3] future sanctions in response to hypothetical civil repression may require a peacetime blockade. Some nations may not comply with such sanctions in the future, and a blockade may be used to enforce compliance. During an armed conflict, some authors have suggested using a blockade to hinder Chinese economic interest in conjunction with or instead of Mahanian strategies.[4] However, China's anti-access and area

denial (A2/AD) weapons systems could force a blockading force hundreds of if not a thousand miles away from China. Holding a blockade at this distance would disrupt trade going to allies, such as Japan, South Korea and the Philippines, who would be instrumental in supporting United States (US) operations. The cessation of the flow of cash and goods from China would have further effects.

This paper examines the requirements, environment and effectiveness of a potential blockade of China from an operational level. The thesis is that an oil embargo geographically focused on the Strait of Malacca and Lombok/Makkasar Straits could be used to indirectly but effectively attack Chinese Centers of Gravity (COG) while still permitting third party maritime trade in the Pacific. It focuses on the considerations a Joint Task Force commander and staff planning such a blockade would face, versus the strategic consequences of such an action. This paper presumes that the strategic and political will exist to conduct a blockade and that the strategic and economic sacrifices from losing exports from China are accepted. This paper also assumes that a need exists to permit significant maritime traffic to reach allies and neutrals in the Western Pacific; therefore, a commander must plan to accommodate this need. Specifically, this paper evaluates the potential effectiveness of an economic blockade, examines legal frameworks to conduct the blockade, and assesses the operational environment for a blockade. The paper considers counterarguments throughout and concludes with recommendations.

Discussion

Effectiveness of a Blockade: a Center of Gravity Analysis

A major operation should achieve a strategic objective, and targeting the COG of an adversary "enhance[s] the chance that one's source of power are used in the quickest and most effective way for accomplishing a given political/military objective."[5] In order to be successful,

a blockade would need to show an effect on China's strategic COG. China's operational and strategic COGs can be determined by using operational art concepts. Then, evaluation of critical capabilities, requirements and vulnerabilities can be conducted. A blockade can then be judged by how well it acts against these critical vulnerabilities. Using these tools, the analysis proves that a blockade is effective over time against China's strategic COG but not against China's operational COG.

The Chinese Communist Party (CCP) is the organization that controls the resources, manages the populace and directs the military; therefore, the CCP is the strategic COG. A critical capability welded by the CCP is managing the actions of the populace. However, this critical capability relies on the critical requirement of support of the people. Many political and economic analysts, as well as the Chinese government, believe this support is maintained through high levels of economic growth. This is a marked change from Chinese culture of the middle of the twentieth century, when the Chinese middle class was much smaller and less dependent on the global economy. As such, a critical vulnerability is long term, significant impact to this economic growth.

An oil embargo would have a significant effect on Chinese economic growth over time. The US Energy Information Administration estimated that China's 2011 petroleum consumption was approximately 9 million barrels a day, compared to domestic production of 4.4 million barrels a day.[6] Chinese oil trends are demonstrated in Figure 1. Africa and the Middle East supply almost 4 million barrels a day, most of which arrives through the Strait of Malacca.[7] The Jamestown Foundation reports that Chinese attempts to reduce reliance on the Strait of Malacca and Lombok/Makkasar Straits have stumbled over the cost and security concerns,[8] and the Myanmar-China oil and gas pipeline is only expected to process 440,000 barrels per day.[9] Crude

Oil Peak reports that Chinese oil production is starting to peak, so the disparity in needs versus production will increase as China consumes more oil. Meanwhile, Chinese oil consumers are already feeling strain due to oil shortages and prices.[10]

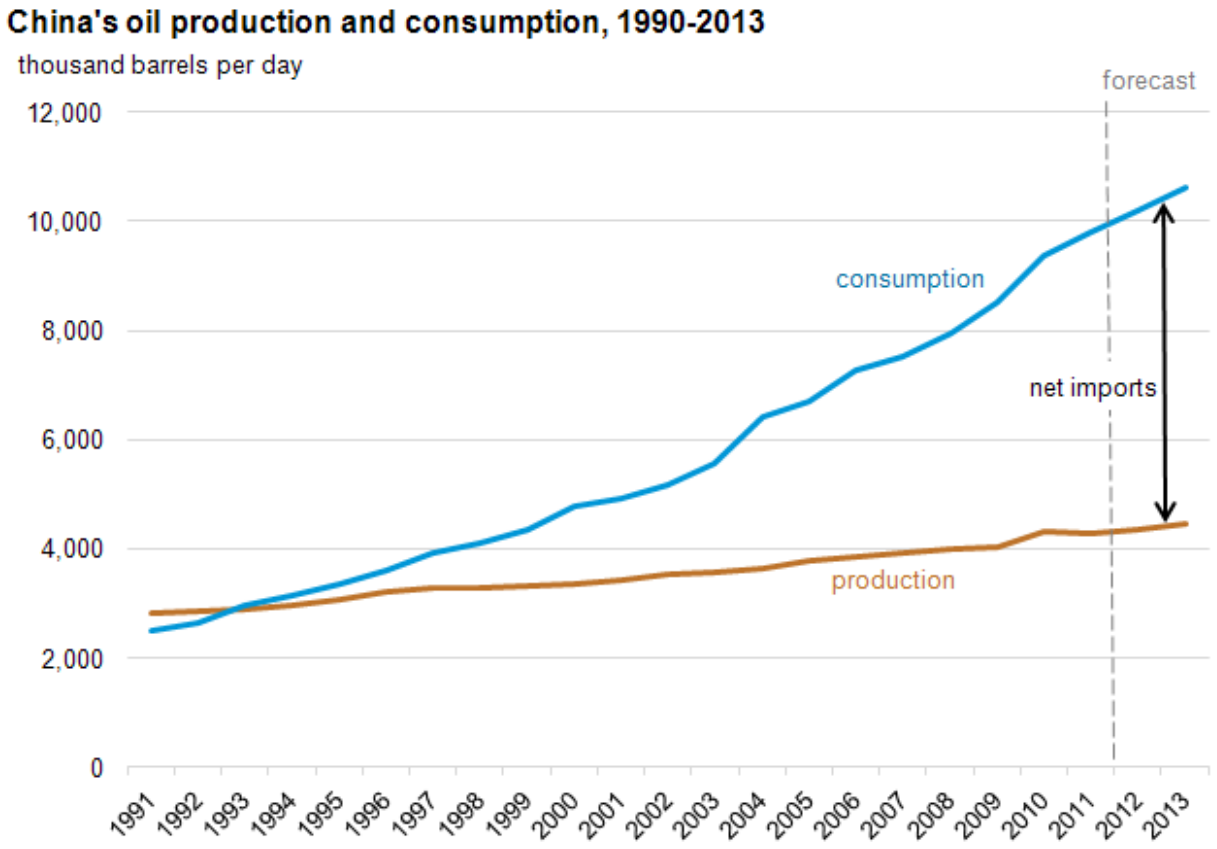

Figure 1 China's Oil Production and Consumption, 1990-2013. Source: U.S. Energy Information Administration International Energy Statistics and Short-Term Energy Outlook (August 2012).

China's vulnerability to oil disruption is understood by the CCP, and they have taken steps to reduce the impact of an oil embargo. Most importantly, they have established and are improving a strategic reserve of oil. The International Energy Agency assesses its capacity is set to 207 million barrels in 2012, expanding to 500 million barrels by 2020.[11] Assuming a blockade was 100% successful in stopping maritime oil shipments with no increase in overland shipment, China's 2012 reserve would supply needs for 50 days without rationing. Historically, the most effective blockades are not 100% effective, and overland shipment is bound to increase in

response to demand. As a centralized communist government, the CCP would have options to promote and enforce rationing, extending their reserve further. While these measures would mitigate oil shortages, the massive disruption to half the need for 9 million barrels a day would still cause skyrocketing oil prices, severe shortages, and strangulation of civil and commercial traffic. The oil disruptions of 1973 provide a historical example of such a campaign's effect. US consumers and decision makers were significantly affected by a partial supply side blockade despite US oil production rate being three times that of imports.[12] This ratio is significantly better than China's current ratio. Because these effects would be cumulative, a commander should still expect a blockade to take months to have the desired effect on the CCP.

China's reliance on domestic sources for electrical power, vice foreign oil, also impacts the effectiveness of an oil blockade. Approximately 70% of China's total energy consumption is supplied by coal, versus 18% supplied by oil.[13] Considering only electrical power, oil only fuels 3% of China's need. While China's power grid may seem insulated from the effects of an oil embargo, China's transportation system is still reliant on oil and would be significantly affected by a blockade. The disruption of transportation would be the decisive factor in an oil embargo's success, as it would disrupt all level of modern Chinese society. A prudent strategic communications plan could further turn this to a blockade's advantage. A commander should emphasize that the blockade is not targeting civil heating and electrical needs, which is sustained by coal. This avoids the quandary of Iraqi sanctions in the 1990's where average citizens were the ones most affected by blockade. This fact reduced international consensus for the Iraqi sanctions.

While an oil embargo would prove strategically effective with enough time, the embargo would have little direct effect on the operational level. Chinese naval forces would be the

operational COG in naval confrontations with the US. These forces, enabled by China's A2/AD network, are the key to exerting China's power in the Western Pacific. This navy consumes only a fraction of Chinese oil needs and could be sustained by domestic production. For comparison, the US Defense Logistics Agency reported that the entire US military uses about 130 million barrels a year, or about 356 thousand barrels a day.[14] This value is well below Chinese daily oil production and consumption, and Chinese military consumption is less than US military consumption.[15] An oil embargo would have its strategic effect on the Chinese populace prior to have an actual logistic effect on Chinese naval operations. However, prudent information operations would benefit from promoting the Chinese "choice" to fuel their naval ships rather than their economy. A distant blockade could also have an indirect operational effect by drawing Chinese naval forces out from under their A2/AD umbrella, removing a key critical capability from their COG.

Legal Constraints

Blockades and embargos have been defined as much by their legal character as by their means or effectiveness. The exclusion zones declared in 1982 over the Falkland Islands and during the 1980's in the Iran-Iraq War could be considered unlawful because they failed to abide to the rules of blockade.[16] A more mundane example comes from the Cuban Missile Crisis. War was not declared between Cuba and the US, so a "blockade" could be considered illegal. The concept of "quarantine" was then invented to implement the same measures of a blockade without being forced into an armed conflict with Cuba and, by extension, the Soviet Union.[17] Even in total war the law of blockade needs consideration. During World War II, Great Britain needed legal definitions for contraband,[18] and Germany required legal cover for blockade runners.[19] The United Nations (UN) adds another layer of complexity on blockades. With the

broad powers of the Security Council, peacetime blockades become a legal possibility. An examination of general legal concerns of a blockade is discussed first. Then three legal scenarios are evaluated, including a unilateral blockade,[20] multilateral action and embargo under UN Security Council Resolution.

While some of the specifics are germane to any blockade, an oil blockade against China would have some specific concerns. One key consideration is whether to use of a true blockade or the belligerent right of visit and search. A true blockade is set to stop all merchant traffic to and from the opposing nation. While some provisions are allowed for entry and exit to a zone of blockade, the universal nature of blockade would prove cumbersome in ensuring that neutral and allied shipping are allowed to pass to neutral and allied destinations. The belligerent right of visit and search is more legally palatable, particularly for conducting an oil embargo from a distant chokepoint.[21] A distant "blockade" would be legally defined as visit and search for contraband applied to merchant shipping on a large scale. A key requirement is that it must occur outside of neutral waters; as such the blockade would need to occur either on the high seas or in the territorial waters of a belligerent. If no belligerent territorial waters cover a chokepoint, there could be no visit and search inside the chokepoint. A blockade runner could conceivable remain inside of territorial waters for some distance under innocent passage to further preclude visit and search. A practical combination of the two for this case study is to conduct visit and search at distant chokepoints using manned assets, then to define a blockade zone close to the Chinese coast monitored and enforced by unmanned or stealth systems.[22]

Conducting a blockade as a unilateral action by the US would not be effective. As most recent US military campaigns have demonstrated, unilateral action risks legitimacy and prevents freedom of action. The conduct of a blockade has additional legal provisions that restrict

belligerent actions in territorial waters and international straits. In particular, customary law reflected by the 1982 Law of the Sea Convention prohibits most belligerent actions in neutral international straits. This would protect oil tankers in international straits from blockade, as US blockading assets would be prohibited from loitering in the straits. A blockade then would have to be established in international waters, greatly expanding the area to be covered and reducing the effectiveness of the blockade. In particular, if Indonesia remained neutral, the blockade would be complicated by numerous archipelagic sea lanes. There are three designated sea lanes, several tributaries to these sea lanes, and numerous other customary sea lanes that crisscross Indonesia. A blockade would have to cover each of these to satisfy blockade effectiveness criteria. This would be a tall order for limited assets operating in a littoral, radar cluttered environment without authority to enter territorial waters.[23]

If a coalition member's territorial waters include critical chokepoints, a multilateral blockade provides significant legal options and makes a blockade significantly more tenable compared to the unilateral scenario. The key enabler is the ability to operate in international straits and on the land surrounding them. This confines the area in which the blockade needs to be established. A multilateral blockade also gives legal means to stop other avenues for transit such as innocent passage in territorial seas or use of archipelagic sea lanes. Operationally, a multilateral blockade also provides ports and bases for ships, aircraft and land assets, allowing more flexibility for force deployment and sustainment. Ideally all the nations with territorial waters overlapping the international strait in question would participate in the blockade. This would completely close the strait. If universal participation is impossible, maximum participation should still be sought. Even bringing only one nation into the conflict as a belligerent would provide legal justification for US blockaders to position in the international

strait and allow land basing. The major obstacle is convincing these coalition nations to become, in effect, belligerents in the conflict. In addition to opening up their territories to the possibility of attack, it would also result in near and long term economic consequences. A key task of the commander would be maintaining the support of these coalition partners.

A blockade with UN backing would provide a commander with the greatest freedom of action of the three scenarios. Article 42 of the UN charter allows for conduct of blockade to "maintain or restore international peace and security."[24] Wolff Heintschel von Heinegg describes both unique considerations and similarities to traditional blockade when operating under Chapter VII of the UN charter. He identifies that while traditional elements of establishment, notification, effectiveness, impartiality and limitations still have applicability, the powers of the UN can substantially modify these traditional concepts. First, a UN sponsored blockade leaves "no room for neutrality."[25] Nations not directly involved in the immediate conflict would be forced to observe the terms of the blockade, and traditional neutral shipping could be held to the terms of the blockade. International straits would become valid zones for enforcement of blockade regardless of the disposition of nations whose territorial waters include these straits. There could be allowances for distant blockades that abide by very generous geographic limitations if authorized by the Security Council. In fact, the Security Council would have wide discretion in defining the terms of the blockade. The sole major limitation would be humanitarian considerations willed by the General Assembly.[26] However, a UN sponsored blockade is unlikely considering China's sway with many members of the UN. While China could be forced to abstain as a party to the dispute under Article 27, a friendly permanent member of the Security Council could still veto a blockade. If the permanent members do not

veto a blockade, the non-permanent members of the Security Council could provide a sufficient voting block to prevent such a resolution.

Due to the unlikelihood of passing UN sanctions and the tremendous difficulty and unpopularity of unilateral action, this paper will assume that a blockade is established under a multilateral framework with Indonesian, Malaysian and Singaporean support.

Operational Environment

The previous sections have assessed that an oil embargo would be effective at influencing Chinese strategic COGs and that legal frameworks are sufficient to justify and execute such action. The next concern is how best to execute a blockade to stop China's maritime oil supply. Three methods to stop the maritime oil flow will be examined, and hazards associated with the chosen scheme will be addressed.

The first approach is to stop the trade at its source. This approach forms the foundation of many contemporary sanctions. Under most sanctions, world organizations or coalitions agree to prohibit the provision of goods, services or money to the nation of concern. Examples include Iraqi sanctions in the 1990's or current North Korean sanctions. However, these sanctions are reliant on provider nations to commit to preventing the supply of the contraband. China's diverse selection of oil providers would frustrate a supply side blockade. While conceivable that some producers would stop providing oil to China (Saudi Arabia, a traditional US ally, is China's number one provider), enough suppliers remain to mitigate the effect of an embargo. Oil producers such as Angola, Iran, Sudan, Venezuela and Congo, who supply about 40% of China's oil, may be unwilling to cut profitable trade to comply with an oil embargo.[27] If these five nations could not be persuaded to stop oil shipments, the resulting peacetime consumption versus supply mismatch would be reduced from 2:1 to 4:3. A 4:3 mismatch places much less

burden on the citizens of China, reducing their discontent and resulting effect on the CCP. This approach should not necessarily be ignored, as every effort to reduce supply and increase cost would negatively affect Chinese economic performance. However, relying on sanctions as the primary means of an oil embargo would not generate a sufficient effect on Chinese decision making.

The next approach is to stop trade at its destination. This can take two forms: either a close blockade could be established, or the port facilities could be rendered ineffective. Both of these options carry significant hazards to the blockaders. A close blockade places forces in reach of A2/AD systems. China's naval warfare strategy and technology have developed significant capability to counter overt, conventional presence within 1000 kilometers of their shore,[28] and close-in blockading vessels would be further vulnerable from the static nature of their operation. Unmanned or stealthy systems could be used to impart some costs close to Chinese ports, but limited ordnance, covert presence and inability to conduct visit and search would curtail the effectiveness of this type of blockade.

Rendering port facilities ineffective might have operational effects, but strategic consequences would cause significant blowback. Kinetic attacks on port facilities that are sustained and broad enough to have an appreciable effect on oil imports would cause significant collateral effects. While likely to satisfy the definition of a legal target, attacking shore oil facilities would cause international outrage, harden Chinese will, and risk escalation due to their economic, non-military nature and likelihood of civilian casualties. Even the environmental damage cause by released oil would need to be considered. Non-kinetic efforts, such as cyber-attack to shut down the oil terminals, have not proven more than nuisance attacks, and a coordinated military cyber campaign would have similar targeting concerns as a kinetic attack.

The third approach is to stop maritime traffic between source and destination. This approach has potential. The area of operations would be outside of China's A2/AD network, minimizing the threat from land based systems. In order to threaten blockading forces, the Chinese Navy would have to sortie away from local waters, which diminishes their capabilities. The Chinese have demonstrated some capability operating in distant waters in counter piracy operations, but the balance of combat power in a symmetric sea battle would favor US blockaders. Much of China's combat potential is consolidated in short range missile patrol craft and diesel submarines, and these assets are less effective operating away from home waters. Operations in distant waters would reduce time on-station, increase the risk of detection and prosecution while transiting, and reduce employment options due to being away from Chinese command, control and surveillance capabilities. The open, shallow approaches to the Strait of Malacca would further increase the vulnerability of such forces, and the narrow confines of the strait would serve to shield a blockading force. Land based strike and maritime patrol aircraft, combined with antisubmarine warfare capable ships, could be sufficient to defend against forces attempting to break a blockade, and a carrier battle group in the Indian Ocean could provide decisive reserve combat power.

Meanwhile, the geography canalizes the disparate oil suppliers into a finite number of chokepoints. Conducting visit and search for contraband in these chokepoints concentrates the oil supply in a central location so that an embargo does not need to be coordinated between several supplier nations. Specific choke points include the Strait of Malacca, the Lombok/Makkasar Straits and other Indonesian archipelagic sea lanes, the Strait of Hormuz, the Bab-El-Mandeb, the Panama Canal, and the Bearing Strait. Attempts to bypass these chokepoints would require significant detours that increase expense and risk of discovery. Even

in a unilateral legal case where blockaders could not operate inside the chokepoint, the characteristics of the operating environment would at least bound the problem.

Figure 2 South China Sea major crude oil trade flows, 2011. Sources: U.S. Energy Information Administration, Lloyd's List Intelligence, GTI Global Trade Atlas, Center for Naval Analyses.

Of the possible chokepoints, the Strait of Malacca is the prime candidate for an embargo's focus. Other candidates such as the Strait of Hormuz or the Bab-El-Mandeb may be more remote from Chinese threats. However, the Strait of Malacca lays astride routes to the two Middle East chokepoints. It also controls oil coming directly from African suppliers, allowing an economy of effort. One source estimates 77% of China's imported oil passes through the Strait of Malacca, demonstrating its value.[29] There is also less worldwide oil trade transiting the Strait of Malacca compared to Middle East chokepoints, so fewer oil tankers would need to be monitored and processed.[30] Other potential choke points are both more susceptible to US influence and have much less Chinese oil trade, though these should also have a presence to monitor compliance.

Despite its prime candidacy for blockade, the Strait of Malacca has several disadvantages that complicate its use as an embargo chokepoint. First, the Strait of Malacca, the Lombok/Makkasar Straits, and the other Indonesian archipelagic sea lanes would all need coverage by blocking forces. Even in peace time, the relatively shallow depths of the Strait of

Malacca require very large crude carriers take an alternate route through the Lombok/Makkasar Straits.[31] The remainder of the Indonesian archipelagic sea lanes would need some form of coverage, though a much smaller footprint could be used to identify large oil tankers running a blockade. A land based radar or an unmanned aerial system supported by a visit, board, search and seizure team on standby would be sufficient.

The second concern is the sheer mass of shipping. A common estimate of Malaccan shipping is 60,000 ships a year, or about 165 a day.[32] Of these, approximately 52 are oil tankers. Some estimates of the number of warships to support traditional visits and searches range from six to thirteen.[33] These numbers could be pared down with the use of land based helicopters and small craft, though there would remain a need for some blockading warships in the Strait of Malacca and alternate routes. This is further complicated by the third concern of allowing neutral and allied oil trade to proceed. These visits and searches would delay neutral and allied oil shipments as well as cause tensions with both the flagged nations and customers. There is the further problem ensuring that oil certified as neutral or allied does not end up in Chinese possession through false-flag measures, resale or outright piracy.

To help solve these two dilemmas, technology and international law could provide the solution. The Automatic Identification System (AIS), which transmit ships' particulars ranging from her course and speed to cargo and ultimate destination, could be used to screen approaching tankers. AIS is a required system for all cargo ships either 300 or 500 gross tons and greater by the International Maritime Organization's International Convention for the Safety of Life at Sea, so all international oil tankers are required to use AIS. Despite its advantages, AIS can be spoofed, or data could be falsified. Significant assets and manpower would be needed to track cargoes, identify false information and corroborate routes to counter these evasion efforts.

Fortunately, this manpower does not need to be on the blockading warships or near the straits themselves. Nations providing flags of convenience could also be solicited to provide data, as should international maritime trade organizations, such as the insurance giant Lloyds.

Finally, the actual effect of blockade on Chinese decision makers and populace must be monitored and measured. There will be some breaches of blockade, whether from blockade runners, overland transport or smuggling from neutral nations within the blockade. A commander would need to be constantly alert to indications that the blockade is performing below expectations. Measures of effectiveness to evaluate popular unrest, motor traffic, and supply to retail stores would need to be developed and collected against. This is in addition to simply monitoring shipping traffic. If the blockade was not performing to expectations, the commander would need to have the intelligence support to identify how oil is reaching China and the operational flexibility to implement counters. These counters could include blockade by convoy,[34] direct targeting merchants in or approaching Chinese waters, and diplomatic actions to stop oil shipments overland, but these responses would need to be evaluated against the possible disruption of neutral and allied oil trade.

Counter-Argument: Chinese Strategic Options

Counter arguments and negative aspects to a blockade have been presented throughout this paper, but a major complexity yet to be discussed is China's strategic response to maritime trade warfare. A major drawback to blockade is the length of time it needs to have an effect, and China has a wide range of asymmetric methods to harm a blockading nation to sap the will to continue maritime trade warfare. A 2008 study conducted by the Naval War College also examined a blockade of China with a focus more on strategic level interaction. It concludes that "China is not fundamentally vulnerable to a maritime energy blockade"[35] because of Chinese

escalatory responses that, strategically employed, would raise costs incurred by a blockading nation. These measures range from cyber-attack on a blockader's domestic industry and economy to diplomatic outrage promoted by China among developing nations. Such techniques have been cited in some Chinese military doctrines, most notably their "unrestricted warfare" concept.[36]

While China does have several retaliatory options, it does not reduce their fundamental vulnerability to an oil blockade. China's asymmetric retaliatory measures, while formidable, would unlikely impose substantially more cost than the initial economic loss the US would accept from choosing conflict with China in the first place. The exception is a massive cyber strike against the US market or power grid, but this would shake the world's economy, hurting China's economic prospects as much as an oil blockade. Despite the military promoting such asymmetric escalation, the CCP would still need to evaluate if these methods would leave China in worse condition than a blockade would cause.

Conclusion

Maritime trade warfare has changed as a result of emerging technologies and growing globalization, but it still remains a fundamental strategy of sea powers. Blockade cannot be discounted just because it is hard in the face of new challenges. In fact, all historical blockades have required time to be effective, and none have been easy. An operational commander can successfully blockade China's oil trade, but the success of blockade hinges more on sufficient time, economic sacrifice and political will to withstand the consequences than on operational impediments. If China chooses to weather a blockade, a commander should not expect to see effects for at least two months. It may take even longer for the cumulative effects to cause a

change to CCP policy. Attempting to shorten this timeline carries a significant risk of escalation, as it would involve eliminating their strategic oil reserves.

Additional operational conclusions can be made. The Strait of Malacca makes an ideal focal point for a blockade. The cooperation of Indonesia, Malaysia and Singapore is required for this to work. Without their assistance, a blockade would not be difficult to defeat. A blockade could be effective while still permitting third party traffic by utilizing existing technological infrastructure. This same technological infrastructure could also be used to conduct blockade as an economy of force effort, freeing military units to conduct other operations. In order to be effective, this would need to be integrated with a significant analytic and data collection capability.

Recommendations

The US should continue to maintain and improve relations with Southeast Asian nations. In addition to being essential in support of a blockade, these relations are critical to ensure continued safety and security of a vital trade route. A data exchange infrastructure should be developed now to improve tracking and accountability of merchant traffic. This mechanism would have tremendous value both during a blockade and in peacetime operations. The US should develop a niche force capability to monitor blockades and embargos from land and sea. This force is essential to free warships for other duties, and they could be a naval reserve force that could be called to a range of contingencies. Also, private firms should be encouraged and contracted to develop a capability to analyze, interpret and track data from AIS and other maritime trade networks to identify blockade runners or repeat offenders.

NOTES

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[20] The word "unilateral" will be used in this paper to reflect a lack of support by nations that have some direct influence over China's maritime oil supply. In this case study, "unilateral" action could still include traditional US allies in the Pacific, such as Japan or the Philippines, but would specifically exclude nations whose territorial waters could provide safe haven or barriers to Chinese maritime oil trade. An example would be if Indonesia, Malaysia, and Middle Eastern nations remain neutral in blockade.
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